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ABSTRACT

This manual was developed to address the need for health-related physical fitness testing of children with special needs. The first section defines the components of health-related physical fitness which consist of: (1)abdominal strength and endurance measured by a sit-up test; (2) flexibility, measured by a sit and reach test; (3) upper body strength and endurance, measured by two select methods--isometric push-up position and/or bench press; and (4) cardiovascular endurance, measured by a 12-minute aerobic movement test. The second section presents a brief overview of psychomotor tests available to children with special needs, as well as suggested guidelines for developing an individualized physical activity program. The third section presents suggested guidelines for placing the child with special needs in the least restrictive environment, the setting in which students can most effectively improve their psychomotor development. Suggestions for student awards in the form of participation, achievement, and excellence are described in the final section. (JD)

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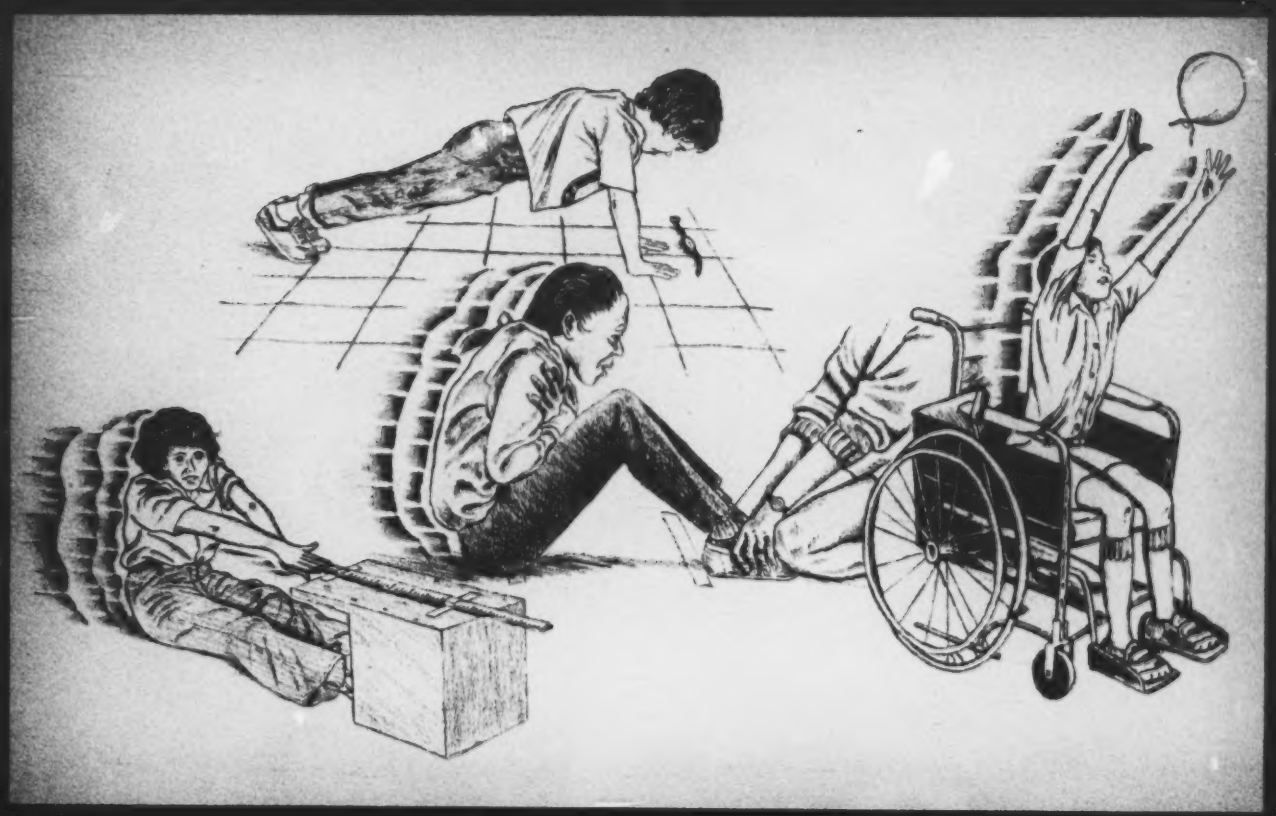

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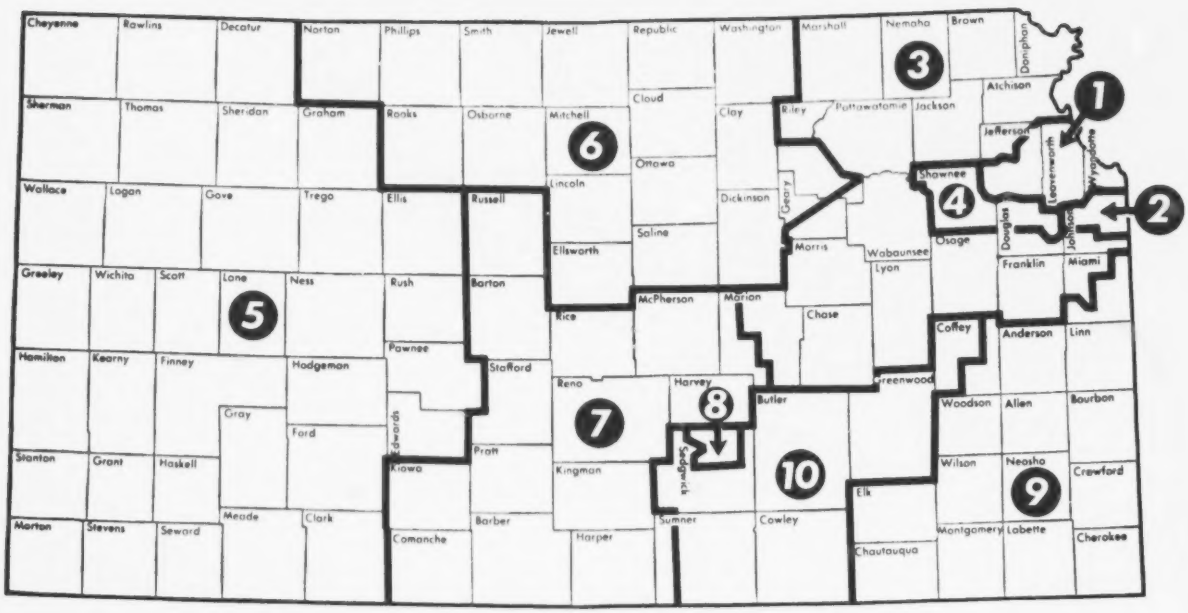

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KANSAS ADAPTED/SPECIAL PHYSICAL EDUCATION TEST MANUAL

Health related fitness
and
Psychomotor testing

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1988

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Last, but by no means least, our sincere thanks and appreciation must be expressed to a lady who approached this task with a philosophy that if it is worth doing, it is worth doing well. Her efforts in behalf of the Kansas State Department of Education and with the co-authors always reflected thought, innovation, and adherence to high levels of professional standards. Thank you Janet Wilson.

Procedures in Developing the Kansas Adapted/Special Physical Education Test Manual

In development of this manual the co-authors used the concept of the nonclassification approach to testing students with impairments and resulting disabilities. The purpose was to develop a test manual that may be used with a majority of impaired students in Kansas school systems, regardless of impairments and resulting disabilities.

The information in the manual, when applied, should supply information about an impaired student's present physical functioning level. In the broadest sense, the use of the testing manual should provide effective information to instructors, administrators, and parents so that instructional program development and instructional settings can be improved for impaired students in Kansas school settings.

Following in outline form are the sequential steps utilized in the development of this manual:

I. Identification of important physical factors to be tested

   A. Health related physical fitness factor selected:
      1. Abdominal strength/endurance
      2. Flexibility of lower back and hamstring muscles
      3. Upper body strength/endurance
      4. Cardiovascular endurance

   B. Psychomotor factors
      For students who possess impairments so severe as to limit their ability to execute necessary movements required to successfully perform a health related physical fitness test.

II. Identification of tests that are good indicators of the factors to be tested

   A. Health related physical fitness
      1. Pat Good's test was chosen because of his adaptions and rationale for testing impaired students.
      2. Pat Good had standardized the procedures for test item administration.
      3. Secured permission to use the test from Pat Good.

   B. Psychomotor fitness
      1. Several tests were identified because of the large variability of testing in this area.
      2. Developed an annotated list of psychomotor assessment instruments.

III. Wrote the first draft of the manuscript of the manual

   A. Subjected the first manuscript to practicing adapted physical educators in the field for critical review of the following:
      1. Content
      2. Readability
      3. Useability

   B. Revised Manual from the reviewers comments

IV. Chose pilot testing schools which were a representative sample of the state of Kansas

   A. Formed a pilot testing committee composed of the pilot testers who are knowledgeable, practicing teachers in the field of adapted physical education.

   B. Conducted a clinic for pilot testers to teach correct methods of administrations of test items.

(2)

V. Pilot study conducted on the health related physical fitness test items

A. Identified problems in administration of test items regarding the following:
1. Equipment
2. Description
3. Scoring
4. Ease of administration
5. To decide if test items are relevant to the level of abilities of the impaired students we wish to access.
6. Test-retest data gathered for assisting in the decision-making processes of item revisions.

B. Pilot testing committee met and revised items.

VI. Wrote second draft of the manuscript of the manual

A. Made revisions based upon decisions of pilot testing committee.

B. Performed a second test-retest on the revised items in the pilot schools.

C. From the test-retest data gathered and determined the following:
1. The test-retest reliability of each item.
2. The predictive validity of each item.

VII. Wrote and published the Kansas Adapted/Special Physical Education Test Manual

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I. Introduction

This manual was primarily developed to address the need for health related physical fitness testing of children with special needs in the state of Kansas. It is based on the rationale that all children can benefit from a structured program of physical activity and no child should be excluded, no matter how limited they are by a handicapping condition.

A. Purpose of Assessment in Adapted/Special Physical Education

Proper assessment procedures with regard to children with special needs is important for a number of reasons, including the following:

1. To assure proper placement in the least restrictive environment (i.e. adapted physical education, regular physical education.) Qualification for appropriate services is contingent on proper referral, screening and evaluation procedures.

2. To develop a program which effectively meets the student's individual needs, an individualized student centered approach can only be effectively implemented by the teacher through sound assessment procedures. Assessment is the critical initial step to effective program planning.

3. To determine each student's strengths and needs in order to effectively individualize instruction (i.e. IEP).

4. To evaluate program effectiveness and chart long term and daily student progress. This method can aid professionals in proper program modifications while motivating each student toward meeting program goals.

5. To communicate to parents and other professionals (i.e. regular physical education teacher) the student's present level of performance. For example, a bar graph can give a visual presentation of the student's strengths and needs.

B. Health Related Physical Fitness Testing

Physical fitness and maintaining a healthy active life style is important for all children. The child with special needs can gain the same positive benefits from health related physical fitness testing as can all children. Sound exercise habits are started at an early age. Therefore, the effective administration of fitness testing can communicate to students, parents and professional school personnel the importance of maintaining a healthy life style and the commitment toward lifelong health related physical fitness. Recent evidence indicates that properly administered testing in health related physical fitness can effectively measure an individual's current health status and potential resistance to disease (NYCFS II, 1987).

C. Test Manual Content

The first section of the manual defines the components of health related physical fitness which consist of the following: (a) abdominal strength and endurance which is measured by a sit-up test; (b) flexibility which is measured by a sit and reach test; (c) upper body strength and endurance which is measured by two select methods--isometric push-up position and/or bench press and; (d) cardiovascular endurance which is measured by a 12-minute aerobic movement test. The second section of the manual presents a brief overview of psychomotor tests available to children with special needs, as well as suggested guidelines for developing an individualized physical activity program (IPAP). The third section presents suggested guidelines for placing the child with special needs in the least restrictive environment, the setting in which each student can most effectively improve their psychomotor development. Suggestions for student awards in the form of participation, achievement, and excellence are described in the final section.

II. Health and Physical Fitness Testing

A. Introduction

The improvement of health and physical fitness has been and continues to be an important aim of adapted physical education. Adapted physical educators want to improve the present health and physical fitness level of each individual they teach. First, we must establish the present performance level in health and physical fitness of each individual by gathering information through the means of the test presented in this section.

The test presented in this section is a good indicator of the following factors that are related to health and physical fitness:

1. **Abdominal Strength and Endurance**
   The muscles in the abdominal area of the body should at a minimum be able to apply the force of muscular contraction to enable us to complete our daily tasks. Without specific strength and endurance requirements muscular - skeletal problems can develop. Proper abdominal strength and endurance helps protect against these problems.

2. **Lower back and leg flexibility**
   The stretching ability of the muscles of the lower back and legs is an indicator of the flexibility of this area. Lack of stretching ability of these muscles puts noticeable strain on the lower back area. This strain may be reflected in lower back pain, poor postural positioning, pulled muscles, and damage to the spinal cord. Proper flexibility in this area helps protect against these problems.

3. **Upper Body Strength and Endurance**
   The muscles in the upper body area are vital in performing specific tasks related to job training techniques, skill development and efficient motor performance. Adequate muscular strength and endurance in this area is a fundamental requirement for success in physical activities be it work or leisure.

4. **Cardiovascular Endurance**
   Cardiovascular endurance is a predominant element in health and physical fitness. The ability of the heart, lungs, and body to respond effectively to physical, emotional, and psychological stress is important for prevention of heart diseases and strokes. The preventive and remedial value of aerobic activity, as related to heart disease, is well recognized today.

B. Pilot Testing of Good's Health Related Physical Fitness Test

The health and physical fitness factors of abdominal strength and endurance, lower back and leg flexibility, upper body strength and endurance, and cardiovascular endurance are covered sufficiently in a test developed by Pat Good, Howe School, 1800 Oakwood Blvd., Dearborn, MI 48124. Pat Good developed his testing procedures with excellent results during the school year of 1981-82 and continuously until the present. Good's test items were used in the initial pilot testing for the development of this manual. As a result of the pilot testing, the pilot testing committee revised all items to fit the special needs of the adapted physical educators and their students in the state of Kansas. Both tests are economical and require a minimum amount of equipment. Both tests are excellent indicators of the health related physical fitness factors previously discussed. Following are the revised items from the results of the pilot testing.

C. Test Items

ITEM I. SIT-UPS (Indicator of abdominal strength and endurance)

1. Administrative Procedures

   a. *Equipment:* Tape measure or yard stick. Flat level surface floor or mat.

   b. *Description:* Individual lies flat on floor or mat. The arms are crossed on the chest with the hands on opposite shoulders. The individual may grasp the shirt. Knees are flexed and feet are flat on the floor with heels 12 to 18 inches from buttocks. The feet are held by a partner to keep them in touch with the surface. On signal, the individual curls his or her back off the surface until the elbows touch the thighs, then lowers the back until the shoulder blades touch the flat surface. If arm contact is broken with chest, do not count the sit-up. The exercise is repeated until the individual stops for four seconds, quits, or completes 50 correctly executed repetitions.

   c. *Scoring:* Record the number of correctly executed sit-ups the student is able to do.

   d. *Adaptations and Rationale:* A one or two minute time limit is excluded to eliminate the motor efficiency factor. The individual is encouraged by the teacher and class through cheers, praise, and the act of rhythmically counting repetitions. If the individual hesitates or gives abnormal or extraneous motor responses, the teacher should give the individual a touch prompt as a reminder to stay on task. (Keep in mind if the individual stops completely for four seconds, the exercise is terminated).

      To assist the tester in keeping the student's heels within 12 to 18 inches from the buttocks, it is suggested that three tape reference lines be placed on the mat or floor. Line one is for placement of the buttocks. Place a second line 12 inches away from line one and place a third line 18 inches away from line one. The student sits on line one and keeps the heels between lines two and three.

Photographs by Lisa Leinacker

2. Instructional Information Prior to the Test

   a. Conduct a discussion session with the students that will enable them to *understand* the proper method for performing the sit-up.

   b. Demonstrate and let students experiment with the proper method of performing the sit-up. Demonstrate and let students experience the proper lying position, leg position, feet position, arm and hand position, and execution of several correct sit-ups.

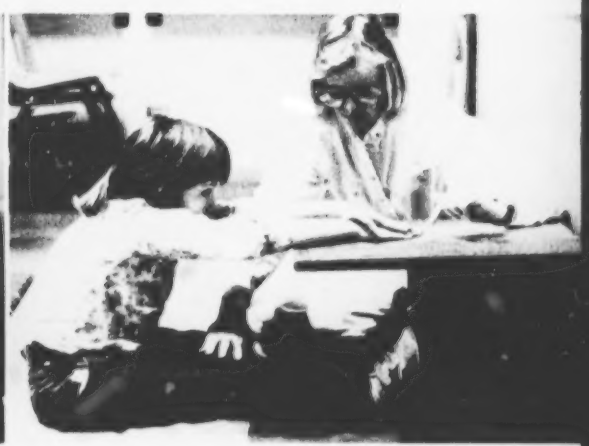
   c. Do not test a student who does not *understand* how to complete several sit-ups. Remember this is a test item for testing abdominal strength and endurance and is not a test of understanding how to perform a correct sit-up. The student should not be tested until he or she understands the procedures necessary to successfully execute this test item. If a student's cognitive level is such that he or she cannot understand how to complete several correct sit-ups, test him or her using the Individualized Psychomotor Testing Section of this manual.

ITEM II. SIT AND REACH (Indicator of lower back and leg flexibility)

1. Administrative Procedures

   a. *Equipment:* A twelve (12) inch high solid bench or box. A twelve inch ruler, masking tape.

   b. *Description:* Tape the ruler to the front edge of the bench or box where the six (6) inch mark is at the front edge and the ruler is at a right angle to the edge. The front edge of the bench or box (6 inch mark) is considered the zero (0) position. The bench or box should be stable so that it will not slide on the floor. For example, place the box against a wall. The student sits on the floor with flat heel shoes on, or no shoes, facing the twelve (12) inch high bench or box with his or her knees straight and feet flat against the front of the bench or box. On a signal, the student reaches as far forward as he or she can with one hand placed on top of the other and the shoulders square. Twisting of the trunk is not allowed. If a student has an impairment in the limbs (legs or arms) the most appropriate limb (the best functioning limb) should be used. No twisting of the trunk is allowed and the shoulders should remain square (parallel to the front edge of the bench or box). Each student is allowed five trials. Record the best trial of the five.



c. *Scoring:* Measurement is made to the nearest inch in a positive, negative, or zero increment. If a student reaches the front edge of the box (6 inch mark on ruler), a zero is recorded (0). If a student cannot reach the front edge of the box (6 inch mark on ruler), the score is recorded in negative increments. As an example, if a student reaches two (2) inches behind the front edge of the box (6 inch mark on the ruler), then a negative two (-2) is recorded. If a student can reach past the front edge of the box (6 inch mark on ruler), the score is recorded in positive increments. As an example, if a student reaches one inch beyond the front edge of the box (6 inch mark on ruler), a positive one (+1) is recorded. The student must hold any position for one second before the score counts. The best trial is recorded. Note: An extra yardstick may be used to obtain positive or negative measures that cannot be measured on the ruler.

d. *Adaptations and Rationale:* Many of the students we work with in adapted physical education have difficulty putting shoes on after they have been removed. One does not want to spend testing time in removing and putting on shoes. A student receives praise from the teacher and other students for reaching beyond the previous mark. These procedures allow the student valuable and immediate feedback during the trials. Students with physical impairments in the limbs or spine (such as cerebral palsy) should perform trials in a fair and just manner unless indicated not to do so by a medical doctor. Adaptations are made for these students so that they may use the best functioning limbs in securing a score. Stickers placed on the sit and reach box may be used as motivational devices for reaching further.

2. Instructional Information Prior to the Test

a. Conduct a discussion session with the students that will enable them to understand the proper method for performing the sit and reach.

b. Demonstrate and let students (especially the physically limited) experiment with the proper method of performing the sit and reach. Demonstrate and let students experience the proper sitting position, feet position, leg position, shoulder position, and hand reach while performing several correct sit and reach trials.

c. Do not test a student who does not *understand* how to complete several correctly performed sit and reach trials. Remember this is a test item for testing flexibility of the lower back and legs. If a student does not understand or cannot properly perform this test item, test him or her using the Individualized Psychomotor Testing Section of this manual.

ITEM III. TWO METHODS OF TESTING UPPER BODY STRENGTH AND ENDURANCE

A. Isometric Push-Up Position

1. Administration Procedures

a. *Equipment:* A flat solid surface mat or floor. A stopwatch.

b. *Description:* A face down position is taken with the hands directly below the shoulders, arms extended, whole body in a straight line, and toes touching the floor or mat. (The correct up position of a push-up). The test terminates when any bending occurs at the elbows, head neck, body middle, or knees. In other words, when the correct up position of the push-up is no longer held, the test is stopped.

c. *Scoring:* Record to the nearest tenth of a second the time the student holds the proper position.

d. *Adaptations and Rationale:* The pilot testing of the original test item for testing upper body strength and endurance was the thirty-five (35) pound bench press. The results of this study disclosed that the 35 pound bench press was not appropriate for the following reasons:

1. The bench press equipment was inconvenient for those who must travel between a number of schools in one day.
2. Younger students were fearful of the weight and bar.
3. The 35 pound weight was too much for students under 13 years of age, and
4. The pilot testers could not endorse the method for students under 13 years of age.

The pilot testing committee, composed of the pilot testers, voted to revise this item so that several methods of testing upper body strength and endurance can be used, including the 35 pound bench press for students 13 years and older. The isometric push-up position is an indicator of static strength and endurance of the upper body, head neck, trunk, and shoulder regions. This test should have few zero measures. Flexed-arm hang requires the student to support the whole body weight in a static position. Pull-ups require the student to move the whole body weight. There will be many zero scores in these test items (See Appendix A).

2. Instructional Information Prior to the Test

   a. Conduct a discussion session with the students that will enable them to *understand* the proper method for performing the isometric push-up position.

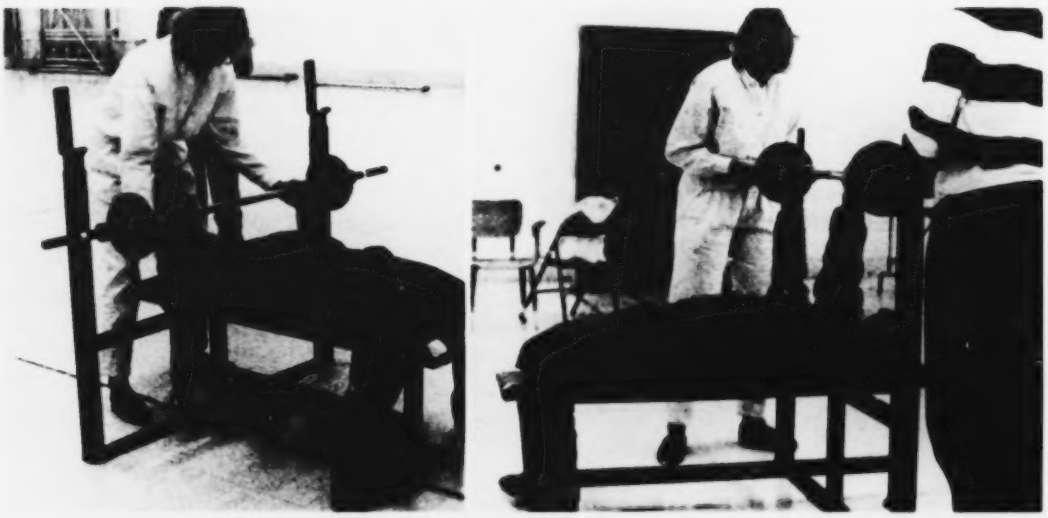
   b. Demonstrate and let students experiment with the proper method of performing an isometric push-up position. Demonstrate and let students experience the proper hands, arms, head, trunk legs and feet position. Give verbal and physical support prompts to student for those body segments that are not in proper position.

   c. Do not test a student who does not *understand* how to complete a properly executed isometric push-up position. If a student does not understand or cannot properly perform this test item, test him or her using the Individualized Psychomotor Testing Section of this manual.

B. Bench Press (Recommended for students 13 years of age or older).

1. Administration Procedures

   a. *Equipment:* Bar, bells and weights that weigh thirty-five pounds (35 lbs.). A bench for performing the bench press.



   b. *Description:* The student lies supine on a bench with knees bent and the feet placed on the floor on each side of the bench. The teacher acts as a spotter or has spotters available for safety. The student grasps a thirty-five pound (35 lb.) barbell with both hands directly above the shoulders and raises the barbell to a straight arm "ready" position. On command the student lowers the barbell until it touches his or her chest then immediately raises it to a straight arm position at a ninety degree (90°) angle to the body. The student repeats this action without rest until the barbell cannot be raised any longer, or 50 repetitions for males and 30 repetitions for females have been successfully completed.

   c. *Scoring:* Bringing the barbell from the straight arm position to the chest and back to the straight arm position represents one correct bench press. Record the number of correct bench press repetitions performed. Males stop at 50 and females stop at 30 correct repetitions.

d. *Adaptations and Rationale:* The bench press is more suitable for testing of upper body strength and endurance for this particular population than either chin-up and/or flexed-arm hang. A lack of balance and general space awareness in many students who are moderately mentally retarded makes them feel threatened and disoriented if their feet are not allowed to maintain contact with the ground. A bench press activity is more consistent with the every day manual work this population will perform during prevocational and actual work experiences. Also, pushing a weight off the chest is consistent with safety skills taught these students throughout their educational life. The spotter stands beside and adjacent to the rib cage rather than behind the student so the student is encouraged to lift the barbell straight upward. Although a unilateral action with both arms is encouraged, students are credited with a successful repetition if the barbell touches the chest and both arms eventually end up in a straight arm position without rest. The tested student is encouraged by the teacher and students through cheering, praising, and rhythmically counting repetitions.

2. Instructional Information Prior to the Test

   a. Conduct several discussion sessions with the students that will enable them to *understand* the proper method for performing the bench press. Stress safety in a positive manner through demonstrations and using only the bar or the bar with lighter weights attached.

   b. Demonstrate and let students experiment with the proper method of performing the bench press with the bar only, with the bar and lighter weights, then finally with the 35 pound weight, bar and bells. At the same time, demonstrate and let students experience the proper lying position on the bench, hand position on the bar, leg and feet position, and correct arm movement through continual feedback to the student. Give positive reinforcement for properly executed positions and movements.

   c. Do not test a student who does not *understand* how to complete several properly performed repetitions of the bench press. If a student does not understand, test him or her using the Individualized Psychomotor Testing Section of the manual.

ITEM IV. AEROBIC MOVEMENT (Indicator of cardiovascular endurance)

1. Administrative Procedures

   a. *Equipment:* Stop-watch and gym area large enough for adequate aerobic movement. If a stop watch is not available, a wrist watch where seconds may be observed may be used. Record player or cassette deck and several popular records or tapes with a fast tempo.

   b. *Description:* In this particular test item the student may run, jog, march, walk with vigorous arm movement, propel themselves in a wheelchair, exercise bicycle, scooter board, use a walker, or move in any fashion to elevate the heart rate above the resting heart rate. The major objective for each student is to reach and maintain a heart rate between 140-180 beats per minute for twelve minutes after a 6-minute warm-up. The tester monitors the student's heart rate every three minutes by taking a pulse rate check at the carotid artery for 6 seconds. If the pulse rate count is above 18 beats, the student is asked to slow down and is closely monitored for stress. *If a student's pulse rate is above 20 beats for two consecutive check points, the student is stopped and the test is terminated.* The student may change gait or means of locomotion throughout the test, but is encouraged to maintain the initial means of movement. It is recommended that no more than eight students be tested at one time on this test item. Keep in mind that it takes approximately 6 seconds to take a student's pulse rate at each check point. Allow all students six minutes of warm-up movement before starting the test item.

c. *Scoring:* At each three minute interval, scoring is determined as follows:

1) First three minutes check (ninth minute; six minute warm up + three minute check)

Below 14--allow the student to continue to move, but give no credit. Student is encouraged to speed up movement.

Between 14-18--give credit for three minutes of aerobic movement.

Above 18--ask the student to slow down and monitor closely. Give credit for three minutes of aerobic movement.

2) Second three minute check

Below 14--allow the student to continue to move, but give no credit. Student is encouraged to speed up movement.

Between 14-18--give credit for three minutes of aerobic movement.

Above 18--ask the student to slow down and monitor closely. Give credit for three minutes of aerobic movement.

3) Third three minute check

Below 14--allow student to continue to move, but give no credit. Student is encouraged to speed up movement.

Between 14-18--give credit for three minutes of aerobic movement.

Above 18--ask the student to slow down and monitor closely. Give credit for three minutes of aerobic movement.

4) Fourth three minute check

Below 14--give no credit.

Between 14-18--give credit for three minutes of aerobic movement.

Sum the number of minutes the student has accomplished correctly.

**Note: A student's pulse rate that is above 20 beats for two consecutive check points is stopped*

d. *Adaptations and Rationale:* To eliminate motor efficiency bias, time and pulse rate are used rather than time and distance covered. Because of the wide range of movement difficulties associated with this population, distance traveled is not a factor in passing the cardiovascular endurance portion of the health and physical fitness test. Pulse rate alone is used to indicate the work output of the heart, lungs, and blood vessels. Students should be discouraged from speeding up prior to heart rate checks. Steady movement should be encouraged. Popular music with a fast tempo is played for the duration of the test to help remind the students of rhythmic pacing and staying on task. The human physical reaction to music is rhythmic movement and often motivational. *Any student that is taking medication should be cleared by a medical doctor or school nurse to take part in the aerobic test item.* The preventive and remedial values of improved aerobic capacity is well recognized today. This test item is aimed at participation in developing good aerobic capacity. All students, except those who because of medical reasons should not participate, are encouraged to complete the full 18 minutes (six minutes of warm-up and 12 minutes of actual testing) of aerobic movement and are given credit for the intervals when the heart rate is in the correct range.

2. Instructional Information Prior to the Test

   a. Conduct several discussion sessions with the students that will enable them to *understand* the proper methods best suited for each to perform aerobic movement. Let the students experiment with several methods of movement patterns.

   b. Allow as many training sessions as necessary for each student to experiment with the selected aerobic movement patterns. Conduct several mini-testing sessions with music. For example, first conduct a three minute session and record the pulse rate. Then conduct a six minute session with two recordings of the pulse rate. Increase to a nine minute session with three recordings of the pulse rate. Finally, expand the time to 12 minutes with four pulse rate checks. Once each student understands what is to be done, perform the test item of aerobic movement. In the mini-test sessions look for those students who have a tendency not to slow down (the heart rate is above 18 beats for the six second pulse rate check). Demonstrate and allow the student to experiment with slowing down and moving rhythmically to the beat of the music. Also look for students who have a tendency to move too slowly (the heart rate is below 14 beats for the six second pulse rate check). Demonstrate and allow the student to experiment with speeding up and moving with the rhythmic beat of the music.

   c. Do not test a student who does not *understand* how to complete several correctly performed mini-test sessions. If a student does not understand, test him or her using the Individualized Psychomotor Testing Section of this manual.

Comments

General health related physical fitness modifications and adaptations include the following:

(1) All items are administered and scored by the physical education teacher indoors in the gymnasium setting, including the aerobic movement test item. This helps to reduce inattention to the task at hand caused by disorientation and/or the many distracting stimuli often found in the outdoor setting.

(2) To overcome the problem of motivation, students are constantly encouraged and praised by the teacher, paraprofessionals, and peers during testing.

(3) Most importantly, a combination of visual, verbal, and physical cues are administered to students when needed by the teacher. The frequency and strategies regarding prompting are determined by the student's mental ability. For example, visual cues can take the form of the teacher mirroring to the student the arm movements required to successfully perform the bench press. A teacher counting repetitions out loud at a desired cadence or tempo during the sit-up test item would be an example of a verbal cue. Physical cues, although used by the teacher, are not given to the point of aiding the required muscle group to perform the actual fitness item. An example of an appropriate physical cue would be the teacher slightly touching a student on the shoulder in order to break the student's concentration from a continuous, preservative movement which may hinder a successful completion of the physical fitness items.

In conclusion, no test can take the place of the teacher's professional judgement. Other health related physical fitness test items may be substituted for test items presented in the health related physical fitness test in this manual. However, the substituted items should be related to the same health related physical fitness factors presented in this manual. For example, a student who can only perform with one upper body limb, a grip strength test or the use of a hand held weight may be substituted as an indicator of upper body strength and endurance.

III. Psychomotor Testing and the Individualized Physical Activity Program

Certain students may possess impairments so severe as to limit their ability to execute the necessary movements required to successfully perform a health related fitness test. To effectively determine the student's level of movement and fitness performance other psychomotor tests must be considered. The Kansas certified adapted physical education specialist should select norm-referenced or criterion-referenced psychomotor tests, a combination of tests, and/or select items from different test batteries deemed appropriate for each student. Areas of psychomotor testing which can be considered are the following: a) reflexes, b) motor and physical fitness, c) motor ability and development, d) perceptual motor development, e) body alignment and posture, f) individual, dual and team sport, g) aquatics, h) dance, and i) leisure/recreation.

The following is a suggested annotated list of psychomotor assessment instruments which may be appropriate for certain students with special needs. Presented is the title of the assessment instrument as well as an address in which to write to secure the test.

A. Physical Fitness

The first two fitness tests described may be purchased through the American Alliance for Health, Physical Education, Recreation and Dance, 1900 Association Drive, Reston, VA 22091.

1. *AAHPERD Physical Best* (1988): This test measures the physiological parameters of health-related physical fitness including cardiorespiratory function, body composition, flexibility of lower back and hamstring muscles, abdominal strength/endurance, and upper body strength/endurance. The norms were established with nonhandicapped students 5-17 years of age.

2. *AAHPER Motor Fitness Test for the Moderately Mentally Retarded* (Johnson & Londeree, 1976): This test measures the motor fitness of moderately mentally retarded individuals ages six through 20 years. The test manual consists of 13 items with the first six items measuring skill related physical fitness.

3. *National Children Youth Fitness Study (NCYFS I):* (1985), *Journal of Physical Education, Recreation and Dance* 56(1): Presents normative data representing the nation's youth from 10-17 years of age regarding various items of HRPF.

4. *National Children Youth Fitness Study II (NCYFS II:* (1987), *Journal of Physical Education, Recreation and Dance*. 58(9): Presents normative data representing the nation's youth from 6-9 years of age regarding various items of HRPF.

5. *Project UNIQUE Physical Fitness Test:* Winnick & Short (1985), Human Kinetics, Champaign, IL: This test measures the physical fitness of sensory (blind and deaf) and orthopedically impaired individuals. The test items are similar to the Health-Related Physical Fitness Test with slight test modifications made when the impairment prevented the group from completing that particular test item.

B. Motor Ability and Development

1. *Bruininks-Oseretsky Test of Motor Proficiency*: Bruininks (1978), American Guidance Services, Circle Pine, MN 55014: The test is designed to measure the overall motor proficiency of children 4.5-14.5 years old. This norm-referenced test must be individually administered and consists of 46 test items (long form) and 14 test items (short form).

2. *Data-based Gymnasium*, Dunn & Associates (1986), PRO-ED Publishers, 5341 Industrial Oaks Blvd., Austin, TX 78735.: A sequenced task analyzed curriculum, designed specifically for children with severe impairments. The test and program follows a behavioral and task analytical approach to evaluating a variety of movement components.
3. *I CAN*, Wessel (1979) I-CAN, Northbrook, IL: H. Hubbard. Provides a criteria achievement-based curriculum covering a wide range of activities from preschool to sport/leisure. The assessment and curriculum is designed to accommodate children of wide range of ability levels.
4. *Ohio State University Scale of Intra Gross Motor Assessment*, Loovis & Ersing (1979). Mohican Textbook Publishers, Loudanville, OH 44841.: A criterion-referenced test which measures the fundamental motor skills of preschool, elementary and young mentally retarded children. The test consists of 11 items with a four point performance rating level for each fundamental skill.
5. *Test of Gross Motor Development*, Ulrich (1986). PRO-ED Publishers, 5341 Industrial Oaks Blvd., Austin, TX 78735.: This test measures 12 fundamental skills (locomotor and object control) in children 3-10 years of age. This test is unique from others as results can be interpreted by means of both criterion-referenced and norm-referenced standards.

* Note: These tests are merely suggestions and the certified adapted physical education specialist is urged to use professional judgement when selecting norm-referenced or criterion-referenced psychomotor tests, combinations of tests, and/or select items from different test batteries deemed appropriate for each student.

C. Criteria for Developing an Individualized Physical Activity Program

Once proper testing has been conducted, the test results can be interpreted and then developed into the individualized physical activity program (IPAP). This program is based on the strengths and needs of each student consisting of long-term goals and short-term behavioral objectives.

Long-term goals are general statements which specify the desired outcomes that an individualized physical activity program is intended to accomplish. A long-term goal should be stated and written in terms that:

(1) are clear and unambiguous,

(2) delineate observable and measurable objectives, and

(3) give clear, attainable direction to the student's individualized physical activity program.

A well-written goal indicates in rather broad terms the intended outcome of an individualized physical activity program, but does not indicate when the intended outcome has been achieved. A well-written behavioral objective will describe when an intended outcome has or has not been achieved. Stating and writing measurable objectives gives the adapted physical educator accountability in the decision-making process. Stating and writing measurable objectives allows the adapted physical educator to:

(1) select appropriate teaching methods, skill and strategies for the individualized physical activity program,

(2) choose needed equipment and suitable materials for the individualized physical activity program, and

(3) select an appropriate time schedule for program presentation of the individualized physical activity program.

A well written behavioral objective consists of a behavior, condition, and criteria. In other words, stating and writing behavioral objectives allows the adapted physical educator to determine when the intended outcomes of a program have been achieved. The individualized physical activity program can and should be part of the students individualized educational program (IEP). What standards should the adapted physical educator apply to determine whether he/she has indeed stated and written an appropriate behavioral objective? Behavioral objectives should:

(1) be stated in terms that can be measured,

(2) describe an outcome that is observable, and

(3) describe a standard of excellence expected of the individual student

The following is an example of a properly written behavioral objective:

The student will successfully perform 25 bent-knee sit-ups with arms across the chest.

Performance: sit-ups

Condition: bent knee with arms across chest

Criteria: 25 successfully completed

D. Selected References in Assessment

The following is a brief list of textbooks that will aid the practitioner in specifically addressing the issue of test selection and the development of an individualized physical activity program for the student with special needs.

1. AAHPERD. (1975) *Testing for impaired, disabled, and handicapped individuals.* Reston VA: AAHPERD Publications.
2. American College of Sports Medicine (1986). *Guidelines for Exercising Testing and Prescription.* Philadelphia: Lea & Febiger.
3. Folio, M.R. (1986). *Physical Education Programming for Exceptional Learners.* Rockville M.D.: Aspen Pub.
4. Jansma, P. (ed) (1984). *The psychomotor domain and the seriously handicapped,* (2nd ed.). Lanham, M.D.: University Press of America.
5. Kirkendall, D.R.; Gruber, J.J.; and Johnson, R.E. (1987). *Measurement and Evaluation for Physical Educators.* 2nd Ed. Champaign, IL: Human Kinetics Pub.
6. National Children and Youth Fitness Study II (1987). A summary of the findings, *Journal of Physical Education, Recreation and Dance.* 58, 51-56.
7. Safrit, M.J. (1986) *Introduction to measurement in Physical Education and Exercise Science.* St. Louis: Time Mirror Mosby.
8. Sherrill, C. (1986). *Adapted Physical Education and Recreation: A Multi-disciplinary Approach.* Dubuque, IA: Wm. C. Brown.
9. Werner, J.K. and Kalakian, L.H. (1985). *Assessment in Adapted Physical Education.* Minneapolis, MN: Burgess Pub.
10. Wessel, J.A. and Kelly, L. (1986). *Achievement based Curriculum Development in Physical Education.* Philadelphia: Lea and Febiger.

IV. Determining the Least Restrictive Environment Through Testing

A. Introduction

The actual guidelines or criteria for placement in the least restrictive environment is a factor too often left to chance and not given systematic consideration. The least restrictive environment is a setting in which each student has the best opportunity to improve their present level of performance. The setting will be different for each student, however, *placement must be based on sound testing and assessment principles.*

The following factors should be considered when testing each student regarding placement in the least restrictive environment.

1. Placement should not be based on a single test score, but rather a battery of test items which give a clear indication of the student's present level of motor performance.
2. The test must be administered by qualified personnel, a Kansas certified adapted physical education specialist.
3. The test must be valid, reliable and selected to meet the unique needs of the particular student being tested.
4. The test must be administered in a manner that assures the student being tested understands and can successfully follow directions.

B. Suggested Guidelines for Determining the Least Restrictive Environment.

How does one determine that particular environment that has the best possibility of improving the present level of performance for students with special needs? The evaluation and placement procedures presented are *suggested guidelines* for a delivery system of placement in to the least restrictive environment. *The least restrictive environment must be available to each handicapped student and include a continuum of services.* It is suggested that local school systems and/or cooperatives establish standards for placement into one of and/or a combination of the following placement alternatives:

1. A regular physical education class with no modification. (Mainstreaming) *and/or*
2. A regular physical education class with modification or an aide. (Mainstreaming with modification) *and/or*
3. An adapted physical education class in a self-contained environment. (Adapted Physical Education in a group or one on one setting) *and/or*
4. A related service such as occupational and/or physical therapy.

Most importantly, placement decisions must be based on the individual needs of the student. It is the opinion of the co-authors of this testing manual that the adapted physical educator, parent or guardian, and the *Individualized Educational Program (IEP) team in a local school setting understands the handicapped student's physical, cognitive, emotional, and social skills best.* These are the most logical persons to determine the student's least restrictive environment in the school system and/or cooperative. Every effort should be made to include the certified adapted physical education specialist as a member of the IEP team. For example, in certain circumstances the student may perform well below age-group standards on the physical fitness test or other psychomotor tests, but may still be successfully mainstreamed into a regular physical education setting. When the student demonstrates mature cognitive, social, and emotional attributes, he or she may still be mainstreamed.

The following are *suggested guidelines for assisting* local school systems and cooperatives in determining the least restrictive physical activity environment:

1. To be placed in a regular physical education class with no modification, it is recommended the student should:

   a. have completed the health and physical fitness test as well as one other standardized psychomotor test. Either norm-referenced or criterion-referenced tests may be used. The test results must demonstrate that the student can physically function in a regular physical education class with no modifications, and

   b. be cognitively, emotionally, and socially able to handle a regular physical education class setting.

   Consultation with the parent or guardian for their approval of placement is necessary. There need not be an Individualized Physical Activity Program (IPAP) developed. Close observation by the regular physical education teacher for the effectiveness of such a placement is recommended.

2. To be placed in a regular physical education class with modifications or an aide to assist, it is recommended the student should:

   a. have completed the health and physical fitness test as well as one other standardized psychomotor test. Either norm-referenced or criterion-referenced tests may be used. The test results must demonstrate that the student can physically function in a regular physical education class with modifications or an aide, and,

   b. be cognitively, emotionally, and socially able to handle a regular physical education class with the help of an aide and/or modifications.

   Consultation with the parent or guardian for their approval of placement is necessary. There need not be an Individualized Physical Activity Program (IPAP) developed, but close continuous consultation should be established between the regular physical educator testing the class, the aide, and a state certified adapted physical education specialist (Kansas State Department of Education) on the development and implementation of program modifications and their effectiveness.

3. To be placed in an adapted physical education class in a self-contained small group environment, it is recommended the student should:

   a. have an Individualized Physical Activity Program (IPAP) developed for his or her improvement. The IPAP must be a component of the student's Individualized Educational Program (IEP). A state certified adapted physical education specialist must be responsible for proper placement, program development, and application.

   Consultation with the parent or guardian for their approval of placement is necessary.

In summary, a *continuum of placement services* must be provided for each student. For example, a student could conceivably be scheduled to receive both regular physical education and adapted physical education in a self-contained setting.

V. Awards

Awards have been and are still used as motivational tools and recognition devices for participation, achievement, and excellence.

Some teachers reason that extrinsic awards (medals, ribbons etc.) do indeed motivate students to achieve. They reason that is what we do when we give grades in class work. They argue that in life we give rewards for excellence by awarding Nobel Prizes in science, medicine, world peace, etc. Some teachers contend that in society we all compete for rewards. Some teachers maintain competition is recognized by achievement awards through a means of compensation and that it is not harmful, but beneficial. They assert that extrinsic awards motivate students to achieve to the best of their ability. These teachers claim that competition, external recognition, and extrinsic awards for achievement are the spice of life. They have come to the conclusion that this is the way the real world works. Therefore, we should use extrinsic awards as motivational tools and recognition devices for participation, achievement and excellence in physical education.

Some teachers reason that intrinsic (self-gratification) awards are the best motivational tools for students to achieve at any level. They contend that in society we should teach the values of health, physical fitness, and motor development concepts for their own value and worth. They argue that these values are too important to put on a competitive level for extrinsic awards which are often frivolous and do more harm than good. They maintain that when one feels better (becomes more healthy and physically fit) and moves better (improved motor proficiency), this is the highest award one can receive. They claim that once a student understands and experiences proper health, physical fitness, and motor proficiency, it remains a reward throughout their life.

There are some teachers who believe that both extrinsic and intrinsic awards may be used to motivate students to achieve. They argue that extrinsic awards may be used to motivate many students to participate in a program of health, physical fitness, and motor development, then at a later date the self-gratification concept should be taught.

Regardless of ones personal philosophy, keep in mind that it is the individual that counts. The best method is that which is most effective for each individual student.

A. Health Related Fitness Awards

Extrinsic award systems are optional. If the teacher decides to use extrinsic awards, it is *recommended* that he or she provide at a minimum the following three awards:

1. *Participation Award.* The student participated in a health related physical fitness testing and activity program.
2. *Improvement Award.* The student demonstrates improvement in a health related physical fitness testing and activity program.
3. *Excellence Award.* The student attains predetermined standards of excellence established by the teacher and student in a health related physical fitness testing and activity program.

B. Psycho-motor Performance Awards

1. *Participation Award (minimum standard).* The student participated in a psychomotor testing and activity program.

2. *Achievement Award (Recognition for Improvement).* The student demonstrates improvement in a psychomotor testing and activity program.

3. *Excellence Award (Recognition for Excellence).* The student attains the Individualized Physical Activity Program (IPAP) long-range goals and short-term behavioral objectives.

APPENDIX A

ITEM III. TWO ADDITIONAL METHODS OF TESTING UPPER BODY STRENGTH AND ENDURANCE

A. Flexed-Arm Hang

1. Administration Procedures

   a. *Equipment:* A horizontal bar approximately 1 - 1½ inches in diameter is preferred. A metal or wooden bar may be used. A doorway gym bar, a piece of pipe, or a inclined ladder can be used. A stopwatch is needed.

   b. *Description:* The height of the bar should be adjusted to approximately standing height. The student should use an overhand grasp (palms facing away from the body). With the assistance of a spotter, the student raises the body off the floor to a position where the chin is above the bar, the elbows are flexed, and the chest is closest to the bar. The stopwatch is started as soon as the student assumes the proper position and the spotter relinquishes help. The watch is stopped when (a) the chin touches the bar, (b) the head tilts back to keep the chin above the bar, and (c) the chin drops below the top of the bar. No kicking, swinging, or raising of knees is permitted. One trial is permitted.

   c. *Scoring:* Record to the nearest tenth of a second the time the student holds the proper position.

   d. *Adaptations and Rationale:* The pilot testing of the original test item for testing upper body strength and endurance was the thirty-five (35) pound bench press. The results of this study disclosed that the 35 pound bench press was not appropriate for the following reasons:

      (1) the bench press equipment is inconvenient for those who have to travel between a number of schools in one day,

      (2) younger students were fearful of the weight and bar,

      (3) the 35 pound weight was too much for students under 13 years of age, and

      (4) the pilot testers could not endorse the method for students under 13 years of age

      The pilot testing committee, composed of the pilot testers, voted to revise this item so that several methods of testing upper body strength and endurance can be used, including the 35 pound bench press for students 13 years and older. The flexed-arm hang is an indicator of static strength and endurance of arms and shoulders.

2. Instructional Information Prior to the Test

   a. Conduct a discussion session with the students that will enable them to *understand* the proper method for performing the flexed-arm hang.

   b. Demonstrate and let students experiment with the proper method of performing a flexed-arm hang. Demonstrate and let students experience the proper arms, hands, legs and chin positions. Next, allow the students to experience the proper positions in a support weight-bearing position. Finally, allow the students to experience the flexed-arm hang.

   c. Do not test a student who does not *understand* how to complete a properly executed flexed-arm hang.

B. Pull-ups

1. Administration Procedures

   a. *Equipment:* A horizontal bar approximately 1½ iches in diameter is preferred. A metal or wooden bar may be used. A doorway gym bar, a piece of pipe, or an inclined ladder can be used.

   b. *Description:* The bar should be high enough so that the student can hang with the arms and legs fully extended and the feet free from the floor. The student uses an overhand grasp with the palms facing away from the body. From the hanging position, the student pulls the body by the arms until the chin is higher than the bar and then lowers the body to a full hang position as in the starting position. The exercise is repeated as many times as possible with no time limit. Allow one trial. The body must not swing during the test. If the student starts swinging, check this swing by holding your extended arm across the front of the upper legs. The knees may not be raised nor is kicking of the legs allowed.

   c. *Scoring:* Record the number of correctly executed pull-ups to the nearest whole number.

   d. *Adaptations and Rationale:* The same fundamental reasons for using the flexed-arm hang are used here. The pull-up is an indicator of dynamic strength and endurance of arms and shoulders.

2. Instructional Information Prior to the Test

   a. Conduct a discussion session with the students that will enable them to *understand* the proper method for performing the pull-up.

   b. Demonstrate and let students experiment with the proper method of performing a pull-up. Demonstrate and let students experience the proper hands, arms, legs, and chin positions in a non-weight bearing position. Next, allow the students to experience the proper positions in a support weighing-bearing position. Finally, allow the students to experience the pull-up in a weight-bearing position. The teacher may want to use the flexed-arm hang position, then lower the body and stop for a few counts half way down, and finally lower the body slowly to a full-hang position. The teacher might want to use this idea in teaching the pull-up with both arms, of course.

Table 13.13 Norms for Flexed-Arm Hang (Measured to Nearest .10 Second) for 6-Year-Old Males (M) and Females (F)

	Normal		LD		ER		TR	
Percentile	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
100	26.4	33.5	19.9	16.9	18.7	15.5	4.2	1.8
90	23.6	28.9	17.7	15.0	16.5	13.8	3.0	1.5
80	20.2	25.8	15.4	13.3	14.3	12.0	2.2	1.0
70	18.3	23.3	14.0	12.1	13.1	10.8	2.0	0
60	16.3	20.1	12.7	10.9	11.8	9.5	1.9	0
50	8.4	10.4	6.4	6.4	5.2	5.0	0	0
40	7.6	9.1	5.6	5.7	4.5	4.2	0	0
30	6.3	8.5	4.7	4.9	3.7	3.4	0	0
20	2.2	2.7	.9	2.9	2.1	1.8	0	0
10	1.0	1.0	0	1.1	0	0	0	0
0	0	0	0	0	0	0	0	0
N	76	71	63	59	60	56	60	57

Table 13.14 Norms for Flexed-Arm Hang (Measured to Nearest .10 Second) for 7-Year-Old Males (M) and Females (F)

	Normal		LD		ER		TR	
Percentile	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
100	28.3	21.7	25.0	29.0	19.2	16.5	9.3	9.0
90	25.6	19.7	22.2	26.1	18.6	15.7	8.2	7.9
80	22.2	17.8	19.3	23.5	17.9	14.8	7.5	7.0
70	20.2	16.0	16.8	19.5	14.7	12.9	5.3	4.9
60	18.1	14.1	13.9	15.4	11.0	11.1	3.2	2.7
50	10.1	8.2	7.9	7.3	8.0	7.9	1.0	.5
40	9.0	7.8	6.7	5.6	6.9	6.7	0	0
30	8.2	7.0	5.1	3.7	5.6	5.5	0	0
20	4.1	3.5	2.3	0	3.1	2.9	0	0
10	2.2	1.6	1.1	0	1.0	1.0	0	0
0	0	0	0	0	0	0	0	0
N	72	73	78	58	60	52	66	59

Source: Measurement and Evaluation for Physical Educators, Second Edition. By Kirkendall, D.; Gruber, J.; and Johnson, R. Human Kinetics Publishers, Inc. Champaign, Illinois. 1987 Reprinted by permission.

Table 13.15 Norms for Flexed-Arm Hang (Measured to Nearest .10 Second) for 8-Year-Old Males (M) and Females (F)

	Normal		LD		ER		TR	
Percentile	M	F	M	F	M	F	M	F
100	28.5	29.2	19.9	25.4	23.6	23.8	8.1	5.2
90	25.8	26.9	18.3	22.7	21.1	21.6	7.5	4.8
80	22.9	23.8	16.5	19.6	18.2	18.9	6.7	4.3
70	20.2	20.9	13.8	17.1	16.0	16.6	4.8	3.3
60	17.3	17.9	11.0	14.3	13.9	14.0	3.1	2.1
50	11.7	11.6	5.5	8.6	9.2	9.1	0	0
40	10.9	10.5	4.3	6.7	8.0	7.8	0	0
30	9.9	9.6	3.2	5.9	6.9	6.9	0	0
20	6.1	5.5	.7	3.1	4.7	4.2	0	0
10	3.2	2.9	0	1.9	2.6	2.0	0	0
0	1.1	1.0	0	0	0	0	0	0
N	82	82	80	60	61	53	67	57

Table 13.16 Norms for Flexed-Arm Hang (Measured to Nearest .10 Second) for 9-Year-Old Males (M) and Females (F)

	Normal		LD		ER		TR	
Percentile	M	F	M	F	M	F	M	F
100	25.6	25.2	30.0	26.4	25.3	21.0	14.3	9.2
90	23.5	23.1	26.9	23.5	22.7	19.1	13.0	8.3
80	21.1	20.8	23.5	19.8	19.8	16.9	11.2	7.8
70	19.0	18.9	21.0	17.2	17.7	15.3	8.7	5.9
60	16.8	16.8	17.9	14.2	14.5	12.9	5.6	4.0
50	12.1	12.0	11.1	6.6	8.9	8.4	0	0
40	10.9	10.9	8.2	4.2	7.9	7.2	0	0
30	9.6	10.0	4.9	3.5	6.6	5.2	0	0
20	7.0	7.6	2.1	0	3.4	1.0	0	0
10	3.6	3.5	1.0	0	.9	0	0	0
0	1.0	1.0	0	0	0	0	0	0
N	75	76	102	53	60	50	67	58

Source: Measurement and Evaluation for Physical Educators, Second Edition. By Kirkendall, D.; Gruber, J.; and Johnson, R. Human Kinetics Publishers, Inc. Champaign, Illinois. 1987. Reprinted by permission.

FLEXED ARM HANG --Female Group 1 Mild

Age Pctile	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
100	11.6	8.0	8.0	13.3	14.0	9.9	20.0	41.0	16.0	15.0	5.8	29.7	18.0	--	--	--
95	11.6	8.0	8.0	13.3	14.0	9.9	20.0	41.0	16.0	15.0	5.8	29.7	18.0	--	--	--
90	11.6	8.0	8.0	11.9	14.0	8.5	14.5	41.0	16.0	12.1	5.8	29.7	18.0	--	--	--
85	11.8	8.0	6.6	7.9	13.8	6.4	6.2	40.7	11.8	7.4	5.7	29.7	17.8	--	--	--
80	10.6	7.6	4.8	5.5	12.2	6.1	6.0	38.6	6.4	5.5	5.6	27.2	16.5	--	--	--
75	10.0	7.0	3.8	4.0	10.5	4.9	6.0	36.5	3.9	4.3	5.4	23.3	15.1	--	--	--
70	9.1	6.7	3.3	3.9	9.4	3.7	6.0	32.5	3.6	3.4	5.3	19.5	14.2	--	--	--
65	8.2	5.9	2.9	3.5	9.3	3.3	6.0	23.7	3.4	2.5	5.0	15.5	14.1	--	--	--
60	6.4	4.0	2.7	2.6	9.2	3.1	5.8	15.0	3.3	1.9	4.6	11.0	14.0	--	--	--
55	3.7	3.2	2.5	1.4	8.6	2.4	4.6	9.7	3.0	1.0	4.1	6.5	12.9	--	--	--
50	1.0	2.9	2.3	0.0	7.5	1.0	2.0	9.0	2.5	0.0	3.1	2.0	10.3	--	--	--
45	0.6	2.4	2.1	--	6.5	1.0	1.3	8.3	2.1	--	2.2	2.0	7.7	--	--	--
40	0.3	1.8	1.7	--	4.8	1.0	0.6	7.0	1.6	--	1.7	2.0	5.9	--	--	--
35	0.1	1.3	1.2	--	2.7	0.9	0.1	5.2	1.1	--	1.2	2.0	4.6	--	--	--
30	0.0	0.7	0.7	--	0.6	0.2	0.0	3.5	0.7	--	0.7	1.6	3.4	--	--	--
25	--	0.0	0.3	--	0.0	0.0	--	2.3	0.3	--	0.3	1.0	2.5	--	--	--
20	--	--	0.0	--	--	--	--	1.2	0.0	--	0.0	0.4	1.8	--	--	--
15	--	--	--	--	--	--	--	0.1	--	--	--	0.0	1.1	--	--	--
10	--	--	--	--	--	--	--	0.0	--	--	--	--	1.0	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	1.0	--	--	--
0	--	--	--	--	--	--	--	--	--	--	--	--	1.0	--	--	--
N	7	11	8	11	6	13	13	6	8	13	8	5	6	3	4	0

FLEXED ARM HANG --Male Group 1 Mild

Age Pctile	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
100	--	--	14.7	13.0	24.0	8.8	18.0	13.0	68.0	35.1	29.0	57.0	28.0	--	--	--
95	--	--	13.8	13.0	24.0	8.6	18.0	13.0	68.0	35.1	29.0	57.0	28.0	--	--	--
90	--	--	8.6	12.7	17.6	8.8	18.0	11.8	52.1	32.8	27.8	47.0	27.1	--	--	--
85	--	--	7.4	12.0	7.9	7.5	16.7	8.2	17.6	27.7	21.5	30.5	22.1	--	--	--
80	--	--	6.5	11.6	7.0	5.8	15.5	6.2	13.0	22.9	16.6	20.0	18.3	--	--	--
75	--	--	6.0	9.6	6.3	4.8	10.4	5.0	10.7	18.0	14.1	15.5	16.3	--	--	--
70	--	--	6.0	5.6	5.8	4.3	5.3	4.4	8.4	12.7	11.9	13.0	12.5	--	--	--
65	--	--	3.9	5.0	5.1	4.0	4.6	3.9	7.4	11.5	9.9	9.6	7.1	--	--	--
60	--	--	3.0	4.2	3.8	4.0	4.0	3.6	6.6	11.1	8.5	9.0	3.4	--	--	--
55	--	--	2.4	4.1	2.1	4.0	3.5	3.3	5.3	10.9	7.4	8.3	0.5	--	--	--
50	--	--	1.1	3.9	0.0	4.0	3.0	3.0	3.5	10.3	5.5	7.0	0.1	--	--	--
45	--	--	1.0	3.1	--	4.0	3.0	2.4	1.8	9.3	3.7	7.0	0.0	--	--	--
40	--	--	0.8	2.4	--	3.3	3.0	2.0	1.2	6.9	3.3	6.4	--	--	--	--
35	--	--	0.6	2.1	--	2.5	3.0	2.0	0.5	4.8	3.0	5.1	--	--	--	--
30	--	--	0.5	2.0	--	1.5	3.0	1.6	0.0	2.9	3.0	2.7	--	--	--	--
25	--	--	0.2	2.0	--	0.5	1.5	1.0	--	2.5	2.8	1.0	--	--	--	--
20	--	--	0.0	1.2	--	0.0	0.0	0.4	--	1.4	2.2	0.0	--	--	--	--
15	--	--	--	0.6	--	--	--	0.0	--	0.0	1.3	--	--	--	--	--
10	--	--	--	0.0	--	--	--	--	--	--	0.2	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	0.0	--	--	--	--	--
0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N	2	4	22	20	13	8	9	11	12	12	10	13	10	2	2	3

Source: A Study of Physical and Health Related Fitness Levels of Mild, Moderate, and Down Syndrome Students in Illinois. By Polacek, J.; Wang, P.; and Eichstaedt, C. Illinois State University. 1985. Reprinted by permission.

FLEXED ARM HANG --Female Group 2 Moderate

Age Pctile	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
100	--	16.0	29.1	57.0	9.0	2.0	21.2	8.0	18.9	22.7	15.2	11.0	23.2	8.4	10.6	0.0
95	--	16.0	29.1	57.0	9.0	2.0	21.0	7.9	18.4	12.4	14.1	10.4	19.0	8.4	10.6	--
90	--	16.0	18.0	29.9	7.2	2.0	18.0	6.6	16.8	7.1	9.3	8.4	10.7	7.6	5.0	--
85	--	15.3	7.6	18.2	4.6	1.7	10.4	4.6	7.3	5.2	7.7	6.6	8.1	4.9	5.0	--
80	--	10.3	3.0	17.7	2.1	1.5	5.6	2.9	6.4	3.0	6.5	2.0	5.7	2.8	3.7	--
75	--	5.5	2.4	17.0	0.0	0.8	1.0	1.7	5.1	1.6	5.9	0.0	4.1	2.1	1.5	--
70	--	2.0	2.1	16.0	--	0.0	0.8	1.0	3.3	0.0	3.8	--	3.4	0.7	0.9	--
65	--	1.9	2.0	7.5	--	--	0.2	0.6	1.1	--	3.1	--	3.2	0.0	0.4	--
60	--	1.8	1.5	7.0	--	--	0.0	0.1	0.7	--	1.7	--	2.9	--	0.0	--
55	--	1.5	0.7	4.3	--	--	--	0.0	0.0	--	0.3	--	1.3	--	--	--
50	--	0.9	0.4	2.1	--	--	--	--	--	--	0.0	--	0.4	--	--	--
45	--	0.3	0.1	0.9	--	--	--	--	--	--	--	--	0.0	--	--	--
40	--	0.0	0.0	0.0	--	--	--	--	--	--	--	--	--	--	--	--
35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N	2	6	15	16	15	9	21	21	30	33	27	24	32	16	19	5

FLEXED ARM HANG --Male Group 2 Moderate

Age Pctile	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
100	19.2	24.0	43.6	--	16.0	27.5	49.6	32.6	23.2	72.0	48.3	36.5	37.3	22.3	44.2	27.2
95	19.2	24.0	43.6	--	15.7	27.5	46.7	22.8	20.6	40.1	36.4	27.8	35.8	21.6	40.9	27.2
90	15.4	19.4	19.7	11.6	11.6	25.4	21.4	14.9	17.5	21.2	29.1	21.2	22.4	15.7	15.0	27.2
85	7.0	11.6	7.3	4.7	4.8	24.1	12.7	6.9	10.5	14.8	26.6	15.9	22.2	14.9	11.8	27.0
80	4.4	4.7	4.5	3.8	3.5	21.8	9.4	4.7	6.6	11.3	15.9	14.5	21.2	11.8	8.5	26.7
75	2.5	2.2	2.7	2.0	1.5	15.0	5.9	4.0	5.5	7.8	10.8	13.6	19.8	10.6	8.0	21.3
70	1.2	1.8	1.6	0.2	0.9	5.0	4.5	3.0	5.0	6.5	7.1	11.6	18.8	8.7	6.7	11.8
65	0.7	1.6	1.0	0.0	0.6	3.2	4.1	2.0	3.5	6.3	6.7	7.1	16.7	6.1	4.3	5.2
60	0.4	1.0	0.6	--	0.5	1.0	2.4	1.7	2.9	5.6	6.1	5.6	12.2	5.6	0.6	4.2
55	0.1	0.4	0.4	--	0.0	1.0	1.3	1.4	2.2	3.1	4.3	3.7	10.9	4.5	0.0	3.1
50	0.0	0.0	0.1	--	--	0.0	0.0	0.2	0.4	2.7	2.0	3.0	9.0	4.0	--	1.6
45	--	--	0.0	--	--	--	--	0.1	0.0	1.0	0.6	2.0	7.1	2.7	--	0.2
40	--	--	--	--	--	--	--	0.0	--	0.7	0.0	2.0	4.9	1.8	--	0.0
35	--	--	--	--	--	--	--	--	--	0.0	--	0.5	0.3	1.5	--	--
30	--	--	--	--	--	--	--	--	--	--	--	0.0	0.0	1.5	--	--
25	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N	12	13	16	25	21	19	33	31	42	35	32	36	21	29	35	8

Source: A Study of Physical and Health Related Fitness Levels of Mild, Moderate, and Down Syndrome Students in Illinois. By Polacek, J.; Wang, P.; and Eichstaedt, C. Illinois State University. 1985. Reprinted by permission.

FLEXED ARM HANG --Female Group 3 Down's

Age Pctile	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
100	--	26.2	6.4	16.6	--	2.0	71.6	5.9	14.5	10.4	4.0	11.9	8.0	4.0	10.0	--
95	--	26.2	6.4	16.6	--	2.0	71.6	5.9	14.5	10.4	4.0	11.9	8.0	4.0	10.0	--
90	--	26.2	6.4	16.6	--	2.0	51.2	5.9	10.9	10.3	3.6	11.4	8.0	4.0	10.0	--
85	--	22.8	6.9	10.6	--	1.3	6.4	5.7	7.3	9.8	3.1	8.5	6.5	3.1	6.5	--
80	--	15.9	4.0	4.5	--	0.4	1.8	5.4	5.0	8.5	2.6	6.5	5.0	1.9	3.0	--
75	--	9.0	1.0	3.3	--	0.0	0.8	5.0	3.6	6.7	2.0	6.1	3.5	1.0	2.3	--
70	--	6.2	0.9	2.0	--	--	0.1	3.4	0.7	6.5	0.9	4.8	2.0	0.4	1.6	--
65	--	3.5	0.8	1.5	--	--	0.0	1.8	0.0	5.6	0.0	2.6	2.0	0.0	1.5	--
60	--	1.7	0.6	1.0	--	--	--	0.8	--	3.7	--	1.6	2.0	--	1.4	--
55	--	0.8	0.3	0.5	--	--	--	0.4	--	2.5	--	1.0	1.0	--	0.8	--
50	--	0.0	0.0	0.0	--	--	--	0.0	--	1.7	--	0.5	0.0	--	0.3	--
45	--	--	--	--	--	--	--	--	--	1.3	--	0.0	--	--	0.1	--
40	--	--	--	--	--	--	--	--	--	0.8	--	--	--	--	0.0	--
35	--	--	--	--	--	--	--	--	--	0.2	--	--	--	--	--	--
30	--	--	--	--	--	--	--	--	--	0.0	--	--	--	--	--	--
25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N	4	7	7	9	3	8	12	7	15	11	14	10	9	8	9	0

FLEXED ARM HANG --Male Group 3 Down's

Age Pctile	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
100	2.5	13.2	38.1	33.9	3.2	--	8.5	24.4	19.7	--	37.0	26.5	29.0	26.4	60.0	--
95	2.5	13.2	38.1	33.9	3.2	--	8.5	24.4	19.7	--	37.0	26.5	29.0	26.4	60.0	--
90	2.5	13.2	38.1	33.9	3.2	--	8.5	16.4	15.6	30.4	37.0	22.2	29.0	23.3	25.8	--
85	2.4	9.7	31.5	32.1	3.1	--	8.5	11.6	6.7	8.6	28.5	17.9	27.0	16.5	14.7	--
80	1.8	5.3	18.2	30.3	3.0	--	8.5	8.9	4.4	7.5	20.0	14.6	23.1	14.0	13.5	--
75	1.1	3.2	5.0	29.5	2.3	--	8.4	5.0	3.2	7.0	16.5	10.0	19.1	11.7	11.2	--
70	0.6	2.9	4.4	28.8	0.9	--	7.9	0.4	2.8	6.0	13.0	7.8	17.8	9.1	8.3	--
65	0.4	2.8	3.7	21.0	0.0	--	6.0	0.2	2.8	4.7	12.2	5.9	16.5	7.3	6.7	--
60	0.1	2.6	3.0	13.2	--	--	4.1	0.0	2.6	4.1	11.5	4.6	13.4	6.0	6.1	--
55	0.0	2.4	2.1	9.1	--	--	2.8	--	1.8	4.0	7.3	4.0	8.7	5.6	5.9	--
50	--	1.7	1.3	5.0	--	--	2.5	--	0.9	3.8	3.2	3.8	4.0	5.1	5.0	--
45	--	1.0	1.1	3.0	--	--	2.1	--	0.2	3.5	1.7	3.2	3.3	4.7	5.0	--
40	--	0.9	0.8	1.0	--	--	1.8	--	0.0	3.0	0.2	2.2	2.6	4.2	5.0	--
35	--	0.9	0.6	0.5	--	--	1.4	--	--	2.3	0.1	1.4	1.9	3.6	3.6	--
30	--	0.6	0.3	0.0	--	--	1.1	--	--	1.4	0.0	0.8	1.1	2.9	1.3	--
25	--	0.2	0.0	--	--	--	0.8	--	--	0.5	--	0.1	0.3	2.3	0.0	--
20	--	0.0	--	--	--	--	0.4	--	--	0.0	--	0.0	0.2	2.0	--	--
15	--	--	--	--	--	--	0.0	--	--	--	--	--	0.1	1.9	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--	0.0	0.6	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--	--	0.0	--	--
0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
N	6	8	7	9	8	3	6	16	12	17	9	15	7	12	17	1

Source: A Study of Physical and Health Related Fitness Levels of Mild, Moderate, and Down Syndrome Students in Illinois. By Polacek, J.; Wang, P.; and Eichstaedt, C. Illinois State University. 1985. Reprinted by permission.

NOTES

Approved 5/10/88

GOALS FOR FY 1989 KANSAS STATE BOARD OF EDUCATION

The following improvement and development goals are adopted from *A Three-Year Plan – Fiscal Years 1989-1991* and the *State Department of Education Plan for Implementing the FY 1989 Goals*.

The State Board and Department of Education will endeavor —

IMPROVEMENT GOALS

A 1.0 — To develop, strengthen, and extend state systems which support excellence in the curriculum and instruction programs of local education agencies

A 2.0 — To develop, strengthen, and extend excellence in vocational and career education programs and improve transitions within and among education and training systems and institutions

A 3.0 — To support and extend excellence in the preservice and inservice training of educational personnel

A 4.0 — To provide leadership in the use of information technologies for improving and extending educational programs

A 5.0 — To continue efforts to overcome barriers which limit the educational development of special populations not currently achieving their potential

A 6.0 — To work with school districts, state institutions, parents, and other citizens in extending support and financing for Kansas schools

DEVELOPMENT GOALS

B 1.0 — To identify the learning needs of populations not currently being served by schools and assess the feasibility of extended programs in local communities

B 2.0 — To improve and extend support for vocational and career education programs

B 3.0 — To conduct a study for developing a performance-based measure for the evaluation of teacher/administrator training programs and certification

B 4.0 — To demonstrate the use of information technologies by extending opportunities for networking and developing alternative learning systems

B 5.0 — To develop affirmative programs for overcoming past barriers for equal opportunity on the basis of race, sex, national origin, geographic location, age, socioeconomic status, or handicapping condition

B 6.0 — To identify methods of increasing resources for local schools and education programs

KANSAS STATE DEPARTMENT OF EDUCATION

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